EXHIBIT 14

[UNREDACTED in the PUBLIC RECORD]

SEAGATE TECHNOLOGY HOLDING, INC. - Seagate Technology LLC adv. Tim Pozar/Scott Nalick

Khurshudov, Andrei - 09-08-2017

9/8/2017

Full-size Transcript

Issue Filter: Print

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Friday, January 5, 2018

UNITED STATES DISTRICT COURT

NORTHERN DISTRICT OF CALIFORNIA

No. 5:16-cv-00523-RMW

IN RE SEAGATE TECHNOLOGY, LLC

LITIGATION

SUPERIOR COURT OF THE STATE OF CALIFORNIA

FOR THE CITY AND COUNTY OF SAN FRANCISCO

Case No. CGC-15-547787

TIM POZAR and SCOTT NALICK,
Individually and on Behalf of All Others
Similarly situated,

Plaintiffs,

vs.

SEAGATE TECHNOLOGY LLC and DOES
1-50,

Defendants.

VIDEOTAPED DEPOSITION OF ANDREI KHURSHUDOV
September 8, 2017

A I was responsible for developing -- for running projects related to big data analytics, machine learning, and different types of exploratory studies.

Q What is machine learning?

A Machine learning term refers to the field of statistics, mathematics or computer science that relates to algorithms or software that improve performance with experience or with time or data. Essentially, they learn over time.

Q Okay. And you also said you did exploratory studies.

A Uh-huh.

Q What does that mean?

A Ad hoc studies, whatever I was finding to be important for the company at the time.

Q So you had the freedom to choose the own -- your -- the areas that you wanted to study?

A That's correct.

Q Did you work at any other position at Seagate in the past other than as chief technologist?

A Yes.

Q And what was that?

A I started as a director of advanced reliability in 2006. Then I moved to -- my subjects

changed, but the next milestone I will say was a general manager of Seagate Recovery Services. Then I worked as a senior director in different other functions, including managing cloud research in the analytics organization.

Q All right. Well, let's take it chronologically from your earliest position. Take a look at your LinkedIn profile on Page 2, please. What was your first position at Seagate?

A Yes, it says senior director, worldwide advanced quality and reliability.

Q What did you do in that position?

A So advanced reliability was a function inside quality and reliability organization of Seagate. While everyone else was focusing on specific products, developing qualification testing, and so on, my team and I were doing, again, advanced researching type projects, exploratory in nature.

Q Did you deal with annualized failure rate in that position?

A Yes.

Q Okay. Relatedly, what about mean time between failure?

A Yes.

Q Defective parts per million?

A Yes.

Q What other reliability metrics did you deal with in that position?

A What you described, general concepts in reliability. Anyone in this position or any position, any function related to reliability will use these terms or calculations at some point.

There is another one maybe, annualized return rate, which is what actually happens. Annualized failure rate, which you mentioned, is just a -- a fraction of annualized return rate.

MR. SHARMA: I think -- did you say fraction or function?

THE DEPONENT: Fraction.

MR. SHARMA: Fraction.

THE DEPONENT: Fraction. It's a smaller.

Q (BY MR. STROUT) Okay. And we'll --

A I'm sorry.

Q We'll return to AFR in a little bit, but for now I want to ask you about ARR. What is that exactly?

A Annualized return rate is a fraction of shipped product that comes back for whatever reason, for any reason, during one year of operations.

THE REPORTER: During one year of --

failure rate increases at the end of its life.

Q (BY MR. STROUT) Let's turn back to your LinkedIn profile. What was your position after senior director of quality data analytics?

A Yes. General manager, Seagate Recovery Services.

Q And you were there from June 2010 to August 2011, correct?

A Uh-huh.

Q What were your responsibilities in that position?

A Seagate acquired a recovery service business from outside, and I was asked to manage it and integrate it into Seagate company business wise, technology wise, people wise.

Q What was your position after that?

A Yes, senior director, cloud research and analytics.

Q And you were there from August 2011 until May 2015; is that right?

A Correct.

Q What did you do in that position?

A Well, as the title says, Seagate became interested in cloud technology and cloud products, and new organizations were formed focusing on this

field. And I was building and managing an organization that was responsible for doing research work, in a way ad hoc research activities, and doing analytics and developing analytics solutions for Seagate.

Q In this position, did you deal at all with annualized failure rate?

A Yes.

Q So then you also dealt with mean time between failure?

A Correct.

Q And defective parts per million?

A Correct.

Q Did you deal at all with factory yield in this position?

A Unlikely.

Q And then after that your position was, as we discussed, chief technologist, big data analytics and insights; is that correct?

A Correct.

Q Okay. You can put the LinkedIn profile to the side.

Before you started working at Seagate -- and actually, you can refer back to the LinkedIn profile if necessary -- but where did you work prior

A It's a very general question. Everyone at Seagate worked on everything related to everything Seagate makes. Specifically, I did not work on products.

Q (BY MR. STROUT) What do you mean by you didn't work on products?

A There's a product reliability organization, and I was always in advanced/research function. So we could have performed analysis of this or that, or look into some issues, but actual product quality and reliability was not my responsibility or my organization's responsibility.

Q Did you perform any research at all that may have been on or related to the ST3000 drive?

A I'm sure I did.

Q Did you perform any research on any of the external drives that used the ST3000 in them?

A I -- to my recollection, I cannot answer this question as yes or no. I do not know, do not remember.

Q All right. That's okay.

I'd like to now go back to talk a little bit more about annualized failure rate.

A Uh-huh.

Q I know you spoke of it earlier, but could

you please define AFR for me?

A If you look at all the drives of a particular model, say, produced during one year, and then you trace their future, the fraction of drives that will come back will represent the annualized return rate.

Of the returns that come back, there will be a fraction measurable, sometimes greater, sometimes smaller, fraction of drives that we will -- Seagate will call no trouble found, for example, no trouble found, which means when drives are tested internally, nothing wrong could be found with them, and it remains a question why they were returned.

There will be another fraction that will be tested and linked to issues outside of expected range of stress. As I mentioned before, drives that are clearly mishandled, for example, or drives that are electrocuted by poor electric connection, something that could be easily discovered.

In the world of the retail, what's called Disty, distribution drives, there will be some other group of drives. Sometimes they are returned without even being removed from the packaging, essentially. Internally this will be called buyer's remorse cases, something like that. Essentially somebody buys and

then change his mind and returns a drive even without trying.

So depending on the application or market, the fraction of not true failures varies, and it could be as great as 80 percent in some cases. For every 100 returned drives, only 20 will be confirmed as having real problem. This is not a typical number, but it could be as bad as this.

Q So does AFR -- that does not include no trouble found drives, right?

A Uh-huh.

Q Or drives that were returned due to buyer's remorse?

A Uh-huh.

Q Or drives that were mishandled?

A Uh-huh.

THE REPORTER: Can I just get you to say yes or no?

THE DEPONENT: Oh, yes. Yes.

Q (BY MR. STROUT) Okay. So -- yeah, I should -- I'll just run through those one more time just because you said uh-huh instead of yes.

So AFR does not include drives --

A Sorry.

MR. SHARMA: Take your time.

THE VIDEOGRAPHER: Need some help?

THE DEPONENT: I didn't do --

(Discussion off the record.)

THE DEPONENT: Okay.

Q (BY MR. STROUT) All right. So AFR does not include drives where there is no trouble found?

A Correct.

Q And it does not include drives that were returned due to what you characterized as buyer's remorse?

A Correct.

Q And AFR also does not include drives that were misused?

A I believe so.

Q Does Seagate calculate AFR, you know, prior to releasing a drive?

MR. SHARMA: Objection, lack of foundation.

Q (BY MR. STROUT) You can answer.

THE DEPONENT: How is that --

MR. SHARMA: If you know the answer -- yeah, if you know the answer to the question --

Q (BY MR. STROUT) You can answer.

MR. GOLDICH: We normally just ignore them.

Is it 5?

THE REPORTER: 6.

MR. STROUT: 6, all right.

I'm now marking as Exhibit 6 the document Bates labeled FED_SEAG 0019045.

(Exhibit 6 marked.)

Q (BY MR. STROUT) All right. Have you seen this document before?

A I have not seen this document before. It looks like a product manual, again typical product manual for a Seagate product.

Q All right. I represent to you that this document was produced by Seagate during discovery in this case. Right there on the first page it says Product Manual, Barracuda; is that right?

A Yes, correct.

MS. MCLEAN: I'd also like to note, as I did yesterday, that this document appears to be a draft. It's not clear that it -- it was released to the public because it has redlines in it.

Q (BY MR. STROUT) Underneath where it says Barracuda it says ST3000DM001; is that right?

A Yes, that's correct.

Q And this document is dated April 2011, right?

A Correct.
Q And the data sheet that we were just talking about, the copyright date was 2011, right?
MR. SHARMA: Take a look at it if you need to.
A That's correct.
Q (BY MR. STROUT) Please turn to Page 19056.
A Uh-huh. Yes.
Q Do you see on this table where it says annualized failure rate?
A Yes, I can see.
Q Okay. And there's a column on here for the ST3000 drive; is that right?
A Yes, that's correct.
Q And the annualized failure rate for the ST3000 is listed as .34 percent; is that right?
A I can see.
Q Do you know why it says .34 percent here, whereas in the data sheet we just looked at it said less than 1 percent?
MR. SHARMA: Objection, lacks foundation, calls for speculation.
A I don't know.
Q (BY MR. STROUT) Okay.

Q A function, okay. So what's -- what's happening with that function?

A Trends. I don't know. It's increasing over time.

Q Okay. And that means -- by increasing over time, do you mean that the failure rate is increasing over time?

A Uh-huh.

Q Okay.

A Yes.

Q Under what circumstances might a Weibull beta of greater than 1 be seen?

MS. MCLEAN: Objection, lacks foundation.

A Yeah, there are lots of reasons. Essentially, if you put a product under stress it's not designed for, you might see something like that.

Q (BY MR. STROUT) So if you put a product under stress it wasn't designed for, you might see an increasing failure rate as time goes on?

A Yes.

Q Does using -- well, let me put it this way. What's the relationship between Weibull and AFR, such that if you use a different Weibull beta, does it affect the AFR?

A No, there's no relationship. Well, I

mean, I -- I don't -- a mathematician in this field might argue with me, but all Weibull does -- so Weibull data is just defining the shape of the curve. It does not define the endpoint, and endpoint depends on other things. In other words, you can have whatever shape you want -- you want -- you want corresponding to whatever failure rate possible. There's -- I don't believe there's a strong relationship or any relationship.

Q All right. Well --

A Like, I'll give you an example.

Q Go ahead.

A Look at this chart or any chart --

Q For the -- for the record, the witness is referring to 1875.

A Right. So the vertical axis here represents an annualized return rate. And you can see the shape of it, but you might not see the actual values of this rate, and this is the lack of relationship. It could be anything there.

In other words, this vertical axis could correspond to 1 percent max range or 10 percent or 20. The shape is just leading to some number. There's no direct correlation between the shape and the outcome.

A Your first assumption that eta is the same is nearly impossible. It's -- you can do a mathematical experiment --

MR. SHARMA: There's no need to speculate.

A Yeah, but it doesn't happen in real time, in real life.

Q (BY MR. STROUT) So does the beta that is chosen have absolutely no effect on the AFR calculation?

MS. MCLEAN: Objection, lacks foundation, calls for speculation.

A I'm trying to do some math in my head. So I'll just repeat what I said before. Knowing beta is not enough. You cannot link beta to AFR. You need to have some other numbers to do that.

So I -- I already used one example. I'm trying to remember this. I'll use another example. It's --

MS. MCLEAN: What page are we looking at?

A 1855, Page 1855.

So again, if I look at this chart, it might look like the beta is greater than 1 in some of these cases, but if I look at the actual annualized return rate at 12 months, it's -- 12 months, it's on the order of -- does it say .4 percent?

Q (BY MR. STROUT) Yes.

A It's -- it's a tiny number. In other words, any customer will be happy to have this product. And this is a return rate. It's not giving a failure rate. Failure rate is --

MR. SHARMA: So the witness is pointing to Bates Stamp FED_SEAG 1855, is pointing to the chart on the right; is that right?

THE DEPONENT: Yes, the chart --

MR. SHARMA: Chart on the left.

THE DEPONENT: Oh, okay, the left.

MR. SHARMA: And the witness is pointing to which --

THE DEPONENT: Let's say on the axis -- horizontal axis --

MR. SHARMA: Okay.

THE DEPONENT: -- marked 12, so 12 corresponds to 12 months or one year.

MR. SHARMA: Okay.

THE DEPONENT: So --

MR. SHARMA: And then which graph, red or -- red or green?

THE DEPONENT: Doesn't matter. They are not that different.

MR. SHARMA: At that point it's

approximately --

THE DEPONENT: .4, .5, something like this, percent ARR. So if you remove all the NTFs and I mentioned mishandlings, some other things, this number will be reduced even further. These are the great numbers independently on what the shape is. That's what I'm just trying to make my point. There's no direct relationship.

Q (BY MR. STROUT) And just for the record, this page says, "Data Analysis Example: MC: 2.5 inch/10K RPM"?

A Uh-huh. Yes.

Q What does MC mean?

A Mission critical. It corresponds with enterprise class product from Seagate.

THE REPORTER: I'm sorry?

THE DEPONENT: Mission critical product.

A Mission critical products are designed for 24/7 operations, unlike the desktop or mobile or external backup drives.

Q (BY MR. STROUT) All right. I'd like to return to the study that you created. The second main bullet point there says, "The main" of the -- "objective of this study is to understand if the above assumptions are correct and how the higher

our understanding.

So, yes, understanding how the higher workload stress is impacting the above dependencies. That's -- that's one of the main objectives of this study, was to -- for that, I believe I considered -- I do not remember this very well, so -- yes. I believe I considered several -- well, maybe -- applications in markets Seagate shipped product to and ranked them by -- by workload, relative workload stress. And, for example, mission critical will fall into the highest workload, and desktop or notebook, laptop drives will fall into the lowest workload case.

So that allowed me to maybe compare them in a way. So that's -- that's the background for this particular bullet in the objectives.

Q What was your methodology for determining whether using a Weibull beta of less than 1, as Seagate does, is accurate?

A The -- the biggest problem with analyzing field behavior of drives is what we discussed in the first 10, 15 minutes here. For example, every chart here, if you read -- I cannot, but I think it's --

Q What page are you referring to?

A I'm referring to 1855. It's really any --

any of these little charts here, they all say ARR.

MR. SHARMA: And the witness is pointing to the chart on the right --

THE DEPONENT: On the right.

MR. SHARMA: -- of the title.

A The left is identical. They all say ARR, annualized return rate. They don't say AFR because we don't exactly know immediately. To get the AFR you need to do failure analysis, and then you need to figure out which fraction is NTFs and which fraction is, you know, experience handling problems, and which fraction was just returned for no reason, and so on, and then you can correct this.

This is not very -- a very convenient way to do kind of big data studies. That's why this study is relying on ARR instead of AFR, with some disclaimers that I needed to make, but they are not the same. But because of that, I didn't even try to do any detailed, you know, mathematical analysis because I knew that this data is not representing exactly the failures. It's representing their combination of failures and return behavior of the customers.

So analysis is mostly visual or graphical. Graphical. I draw a straight line and just make some

conclusions from that.

MS. MCLEAN: I'd like to point out that the witness said NTF in his answer instead of MTBF.

THE DEPONENT: Yeah. NTF, yes, no trouble found.

Q (BY MR. STROUT) Did you during your -- when you were producing this report, did you account for no-trouble-found drives?

A So if I remember, after I distributed -- that's why I remember there -- there should be multiple versions of this, because I remember that when I distributed my draft version I got critique from other colleagues, right?

And the critique was around -- for the client space, let's call it, desktop and notebook drives, the critique is always that the fraction of NTFs and buyer's remorse and some other things is so large, it's really -- if I use return rates, I can be very wrong estimating failure rate because the fraction of -- the unknown fraction could be as large as, say, 40 percent of the number that's critiqued for the client space.

For the enterprise space, mission critical hard drives, the critique was around the return patterns. For example, Hewlett-Packard or Dell, when

Q -- "much less than 1, Superhawk cumulative failure rate was closer to straight line, and Pharaoh's trend looks almost straight now," and in parentheses "B equals 1."

Is that correct?

A Correct.

Q So the -- are the -- is the Weibull beta increasing with each generation?

A This page is inferring that, but -- inferring, but I already -- I think I spent five minutes explaining that this is ARR, not AFR, and Weibull -- Weibull beta is actually related to only AFR.

So how the AFR looks for this product, it was -- it's unknown to me, and I didn't want to spend time investigating that. Again, this is -- this was meant to do a quick analysis. I don't know, maybe I spent a few days on this. It's not -- I doubt I spent to just produce this report. Because eCube allows you to -- to collect this chart relatively quickly. I had some ideas. I packaged them into this. I still -- I'm not saying that what I said here is wrong. I'm just saying there are limitations to my claims in this document. This is meant to provoke a discussion, which it did, I presume, I

think. It was five years ago.

From what I see here, if I'm a person critiquing this presentation, and there were people critiquing it, I will say that this chart show a combination of product reliability changes and customer behavior changes. Customers might be behaving drives -- returning drives differently now than in times of Tonka, which probably was more than 10 years ago. And we can totally understand that because 10, 15 years ago we did not have Amazon online sales, right. Now we have. The behavior could become very different.

So at the time of this report, this was I presume a useful part of the discussion, and I don't think it's totally conclu- -- conclusive. If you look at the bottom, even in the draft version I'm writing, "Need more data analysis to confirm this observation."

Q Now, just to clarify, though, on the chart there's some text that says, "Beta increases with each generation"; is that right?

A Yes, that's correct.

Q Now, Grenada is on this chart, right?

A Correct.

Q And it's not a complete curve; is that

correct?

A No. That's correct.

Q Okay. But the data points that are plotted on the graph, it does go to the left of B equals 1; is that right?

A Actually --

MS. MCLEAN: Objection, vague.

A No, it's -- it's actually not right. No. B equals 1 is not a fixed line. It's just a -- what is the term -- it's just a -- like a derivative.

Q (BY MR. STROUT) What is that dotted line on the graph, then?

A I think it corresponds to -- it's a -- it's a straight line that comes close to the maybe a purple curve, but I can draw another straight line through green 1. And -- in other words, the dotted line is not some sort of fixed line. It's just a representation of a straight line provided for comparison. What we should look for is we should look for a curve that maybe initially follows a straight and then it crosses it, basically deviates up -- upward from the straight line. Then it's interesting.

Q So to the right of that dotted line we were just talking about it says B is less than 1; is

Q (BY MR. STROUT) But going back to my question, to the left of the dotted line it says B is greater than 1; is that right?

A It's anything that is -- that starts as a straight line but then tilts below it, becomes beta less than 1. If it starts as a straight line and tilts upward, then it's beta more than 1. So -- so each of this curve has its own straight line. I just didn't draw --

Q Right, I understand.

MR. SHARMA: I think he's testifying that the beta is -- the beta depicted here isn't a straight line.

THE REPORTER: Is or isn't?

MR. SHARMA: Is not.

Q (BY MR. STROUT) But just -- my question, it's very simple -- I understand everything you said, but just to the left of the dotted line it says B is greater than 1, correct?

A Yes.

Q All right. Thank you.

A And frankly, again, to avoid over-interpretation of this --

Q Uh-huh.

A -- somewhere about hour and a half ago I

mentioned that when the production starts, the process is not as stable. It -- it becomes more stable later.

The second thing that needs to be mentioned for that part, that the production volumes during that time are very low, which means whatever happens in the first -- we usually I think use two quarters of -- of waiting before we start making judgments about what's going on, because the first two quarters is -- you might be going from hundreds of units per day to tens of thousands of units per day, and even that is a low volume.

So, in other words, the Grenada here -- and this is the reason why I wrote at the bottom, we should wait until we could make a conclusion about Grenada, is because if I can count it correctly, it's four -- no more than five months old, which means it's under five -- under two quarters, which means we will not make judgment. And if you -- about this until we see more data.

And if you -- if you want to do a mental sort of experiment, just close a page like this, after -- say after 10.

Q Okay. I'm not quite sure how we're going to get this on the record, but for the record --

A Make projections for other curves, you probably will be wrong. Things change over time. For example, blue one crosses the pink one after a couple of years. While initially it was below, it becomes higher.

So my point is that that's why a lot of data has to be collected before, you know, statistically significant statements are made. This is why I was careful about Grenada specifically on this page.

Q Okay. Turn to Page 1857, please.

A I'm already on it.

Q Oh. Well, 1859 is what I meant.

A Okay.

Q All right. So the first bulletin on 1859 says, "According to the above chart, higher workload stress could be used as an explanation to the fact that some product families show constant or increasing failure rate over time," and in parentheses, "signatures of potential wearout."

Is that correct?

A Yes, that's correct.

Q And underneath that it says, "Less than 50 percent of high workload products," parentheses, stress -- "stress level 4 and 5, show failure rate

workload are exposed to workloads maybe 10 times higher than we even anticipated, so just incredibly high workloads. And this is what this is referring to.

Essentially, as we as a company anticipated us moving more and more -- 2012 is just maybe beginning of cloud storage. Since then a lot more sales go into cloud storage. So this was a sort of a warning that a much higher workload stress environment is just behind the corner, and it might change our perception unless we have, you know, analysis, perception of real stress in the field.

Q Underneath that you wrote, "Considering that we observe beta less than 1 in most of our internal," and in parentheses RDT, ORT, end parentheses, "tests, one could conclude that these relatively short tests do not predict well the long-term product reliability behavior."

Did I read that correctly?

A Yes, you read it correctly.

MS. MCLEAN: Actually, you left out a word. "Do not necessarily predict well."

Q (BY MR. STROUT) "Do not necessarily predict well the long-term product reliability behavior."

A Correct.

Q Okay. And you continue on this page, the very last bullet point says, "Longer-term reliability tests, about one year, might need to be introduced to gain more confidence in reliability projections."

Is that right?

A Correct.

Q Okay. So how long -- do you know how long these reliability tests, RDT, ORT tests, are run for at Seagate?

MS. MCLEAN: Objection, lacks foundation.

A Yeah, I -- it's been a while so I'm forgetting things, but I'm pretty sure that for the enterprise class of products, for a long time now Seagate has longer tests than -- than RDT. RDT is six weeks, but there are now tests that run for months and months.

And again, that's -- there is one other thing you need to understand, that it's not just the time of the test. There are such things as acceleration factors in the test. For example, if test is ran under twice as high workload as we expect, we can assume that it's a longer time test and, you know, we actually measure the same. Another known accelerator is temperature.

So -- so equivalent time of this test is not six times. At the time an RDT test might be -- I don't remember, but it might be a year.

So what I'm talking about here is making it even longer, and I know there are longer tests now used for, you know, mission critical products and enterprise class products -- enterprise class products.

Q (BY MR. STROUT) What about for desktop class products, have longer term reliability tests been implemented for those?

MS. MCLEAN: Objection, lacks foundation.

A Can you give me a second? I cannot remember this report. Let me look at it.

Q (BY MR. STROUT) Sure, take your time.

A What does it say.

Yeah, I think -- I think it's what I -- I remember. The thing is for the -- this client space, for desktops and mobile drives, this -- this study actually didn't show any even hints of wearout. The beta is always below 1. So the conclusion would be -- and this is again part of this study -- it's a low workload environment, and drives behave exactly how we expect. It's our mission critical products that might be affected. Look at them. This is the

direction of this -- of this summary, of this sort of work.

But so it -- from what I see here, we see the same thing in the internal tests and external tests, beta is less than 1, which means that the stress applied, you know, in Seagate tests is sufficient for this environment. So I don't think there's any recommendation to reconsider anything for client space. Desktop, notebook, external storage, all look like expected.

Q Okay. Well, please turn back to 1857, please, 1857.

A 57, yes.

Q And here the beta is increasing with each generation; is that correct?

A It looks like it, yes.

Q Well, it says that, doesn't it?

A It says that, yeah.

Q And these are desktop class drives, correct?

A Correct.

Q Okay. So do you know if longer term reliability tests were ever implemented for desktop class drives at Seagate?

A I don't know. I don't know. Based on

STATE OF COLORADO)

) ss. REPORTER'S CERTIFICATE

COUNTY OF DENVER)

I, Pamela J. Hansen, do hereby certify that I am a Registered Professional Reporter and Notary Public within the State of Colorado; that previous to the commencement of the examination, the deponent was duly sworn to testify to the truth.

I further certify that this deposition was taken in shorthand by me at the time and place herein set forth, that it was thereafter reduced to typewritten form, and that the foregoing constitutes a true and correct transcript.

I further certify that I am not related to, employed by, nor of counsel for any of the parties or attorneys herein, nor otherwise interested in the result of the within action.

In witness whereof, I have affixed my signature and seal this 21st day of September, 2017.

My commission expires September 3, 2018.

_____

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